

Development of Transportation Systems

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Road systems (including ordinary traffic monitoring and street signal control systems and toll way (peage) systems with toll gate tickets and payment), railway systems (incl. mixed train traffic on general nets with, for example switch [aiguillage] interlocking and other signaling subsystems), air traffic systems (across ground control, terminal or tower control, area control, etc.), and, for example, container vessel shipping across sea lane between harbours, all share underlying abstractions such as transportation nets with hubs (road intersections, train stations, airports and harbours) and links (road segments, train tracks, air and sea lanes) and their states of being open or closed for certain flows of traffic across hubs and along links, etc.

In this talk we shall first hint at an abstract formal model for such transportation and then show how it can be refined into models for road traffic, train traffic and air traffic. Then we likewise hint at how such, so-called domain models -- which reflect only what there is "out there", in reality, before computing and communication--- can be rigorously transformed into requirements for respective traffic monitoring and control systems.

The talk concludes with a discussion of issues of development of the right systems, that is, the systems that customers (that is, transportation and traffic authorities) expect to receive, and of systems which are right, that is, correct.